

TEACHER CERTIFICATION DECISION SUPPORT SYSTEM

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ABSTRACT Technology in education in Indonesia has continued to improve throughout the 21st century. This results in a continuous evaluation of the education system, which in turn provides information on educational gaps. SMK Persada Bandar Lampung is an educational institution that has problems in assessing the feasibility of teacher certification, which does not yet have a system where errors often occur in the assessment process. Evaluating the feasibility of teacher certification, which is subjective will take time to process the results. In the process of assessing the feasibility of teachers, certification errors may occur. SMK Persada Bandar Lampung requires a decision support system that is expected to find a solution in the process of determining the best teacher. The decision system for assessing the feasibility of teacher certification can facilitate data processing of the results of the teacher certification feasibility assessment at SMK Persada Bandar Lampung. Therefore, the researcher proposes a decision support system software engineering by applying Simple Additive Weighting (SAW). This system can later be used to assess the feasibility of teacher certification at SMK Persada Bandar Lampung to assist schools in evaluating the shortcomings and strengths of teacher performance.

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1. INTRODUCTION

Technology develops quickly and produces innovations that must be balanced with the ability to adapt to the technology. One of these areas is decision support systems that can assist in decision-making. According to Hathaway (2015), Vercellis (2011), Decision Support System (DSS) is a computer-based interactive application that combines data and mathematical models to help in the decision-making process in solving problems. The concept of a Decision Support System (DSS) was first expressed in the early 1970s by Michael S. Scott Morton with the term Management Decision System. The system is a computer-based system that aims to assist in decision-making by utilizing specific data and models to solve various unstructured problems Dewanto and Arrozi (2016). Therefore, it is possible that this latest system can help overcome existing issues efficiently. This research aims to build an information system and implement a decision support system to assist schools in assessing the feasibility of teacher certification. This research focuses on the field of education, where evaluating the feasibility of certification for teachers requires a system that can determine the feasibility of certification for teachers quickly and accurately. This has become a problem that is quite complex, so it is necessary to create a decision system that can facilitate the data processing of the certification feasibility assessment for teachers at Persada Vocational School Bandar Lampung. From the several literacies that the author reads, SAW himself can be used for the fuzzy method Wang (2019), some are used for data

analysis Shakouri et al. (2014) and also used as decision support Chou et al. (2008). Therefore, the researcher proposes software engineering as a decision support system using Simple Additive Weighting (SAW) and a Web-based user interface. In addition, the simple additive weighting (SAW) method can assist in determining the feasibility of teacher certification.

2. MATERIALS AND METHODS

The waterfall model is a model that system analysts in general often use. The essence of the waterfall method is that the work of a system is carried out sequentially or linearly. So if the first step has not been done, the second step cannot be done. If the second step has not been carried out, then the third step cannot be carried out, and so on. The third step will automatically be carried out when the first and second steps have been carried out. This model takes a systematic and sequential approach. It is called a waterfall because the passed stages must wait for the completion of the previous phase and run sequentially. In general, the steps in the waterfall model can be seen in the following (Figure 1)

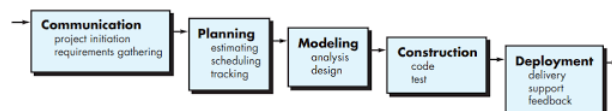


FIGURE 1. The waterfall model cycle, according to Pressman (2014)

Data collection

In this study, the stages of data collection with the following techniques:

- A. Interview Interview technique success in obtaining data or information from the object under study depends on the researchers' ability to conduct interviews. The way to conduct an interview is to start by presenting a general topic to help the researcher understand the meaning perspective of the interviewee. At this stage, the authors conducted interviews directly with the principal to obtain data related to the feasibility of teacher certification.
- B. Field Observation Observation activities include systematically recording the behavior events of the objects seen and other things needed to support the research being carried out. One of the leading roles in making observations is to find complex interactions with natural social backgrounds. The writer observes/visits SMK Persada Bandar Lampung directly at this stage.
- C. Literature Study Document studies assist researchers in collecting data or information by reading letters, announcements, meetings, summaries, written statements of specific policies, and other written materials. While the data obtained by the author includes teacher data.

3. RESULTS AND DISCUSSION

The stages of development can be described as follows: **Analysis**, The process of gathering requirements is carried out intensively to specify software requirements so that users can understand what kind of software is needed. Software requirements specifications at this stage need to be documented.

Design, Software design is a multi-step process that focuses on the design of software programs, including data structures, software architectures, interface representations, and coding procedures. This stage translates software requirements from the requirements analysis stage to a design representation so that it can be implemented into a program at a later stage. The software design produced at this stage also needs to be documented.

Code Generation, The design must be translated into a software program. The result of this stage is a computer program following the procedure that has been made at the design stage. The result of coding is creating the user interface and user interface. The login form is the first form that comes out when you want to enter the admin page program. The function of the login form is to restrict program users. Filling in the username and password takes from the admin table in the database. The procedure for logging into the application is to find a username that matches the username input. If the username is found, adjust the password according to the username. If the two fields match, the user will enter the application; if they do not match, a message will appear that the username or password entered is incorrect. Login form (Figure 2)

The Values page displays the value data form according to the value for implementing the SAW Method as a Decision Support for Teacher Certification Eligibility. The value data page is shown in (Figure 3)

Testing, Testing focuses on the software logically and functionally and ensures that all parts have been tested. This is done to minimize errors and ensure that the output is as desired. System testing uses the black box method, where the tests are grouped based on the test class. This testing technique compares the results of observations to system per-

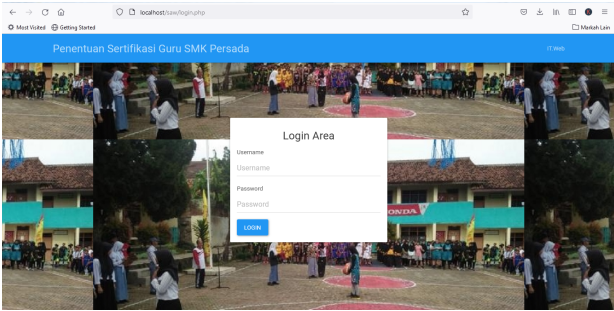


FIGURE 2. Login Form.

Data Nilai Preferensi			
No	Keterangan Nilai	Jumlah Nilai	Aksi
1	Surat SK Singgih (C1)	1	 
2	Surat SK Rendah(C1)	0.5	 
3	Umur Tinggi (31-40)	1	 
4	Umur Sedang (41-50)	0.8	 
5	Umur Rendah (31-40)	0.6	 
6	Umur Sangat Rendah (SR)	0.4	 
7	Masa Kerja Sangat Baik	1	 

FIGURE 3. score page displays Form.

formance planning. Tests are carried out to determine the suitability of the commands written in the program code. For the stages of the test plan, it can be presented at (Table 1) While testing the test results can be presented on 2)

TABLE 1. Test-Plan table.

Class	Function	Level	Type
Login	Login	Integration	Black Box
Data Value	Enter Value	Integration	Black Box
Data Value	Edit Value	Integration	Black Box
Data Value	Clear Value	Integration	Black Box
Data Criteria	Input Criteria	Integration	Black Box
Data Criteria	Edit Criteria	Integration	Black Box
Data Criteria	Clear Criteria	Integration	Black Box
Data Alt	IA ^a	Integration	Black Box
Data Alt	ED ^b	Integration	Black Box
Data Alt	DA ^c	Integration	Black Box
Rank Result	View Rating	Integration	Black Box
Rank Result	Print Rating	Integration	Black Box

^aAlternative Data Input. ^bEdit Alternative Data. ^cDelete Alternative Data.

4. CONCLUSIONS

Based on the results of research, discussion, and testing, it can be concluded that the support system to help determine teacher certification using the SAW method can determine the right assessment in providing inaccurate recommendations. In addition, the presence of this information system can make it easier for the PERSADA SMK Bandar Lampung to select and validate data from the system with the best value until it meets the criteria or requirements for obtaining certification.

TABLE 2. test results table.

Class	Input	Expected	Compliance	Deduction
Login	Username:admin Password:admin	User can log in to the next page as admin	Can do Editing data as expected	Accepted
Data Score	Details Score	To do adding value data into the system	Data increases according to input.	Accepted
	Edit Details Score	To do change value data from system	Value Data change according to input changes	Accepted
	Edit Details Score	Deleting Value data from the system	Value data is reduced according to the deleted id	Accepted
Criteria Data	Criteria Data Details	Adding Criteria data into the system	Criteria data increases according to input	Accepted
	Edit Criteria Data	Make changes to the Criteria data from the system	Criteria data changes according to	Accepted
	Clear Criteria Data	Deleting Criteria data from the system	Criterion data is reduced according to the deleted id	Accepted
Ranking Data Results	View Ranking Data	Display Ranking Data from system	Rating Rank data will appear	Accepted

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AUTHORS' CONTRIBUTIONS

They are the ones who have contributed to completing this research with the responsibilities and abilities according to their respective fields. S and KZ designed this study and wrote the initial manuscript. KZ Improved the manuscript and matters related to publication, and F Translated the text and did some design. YY conducted testing on the results and recorded the test results, which then collaborated with F to scan manuscripts and tables. "All authors have approved the final version of the manuscript."

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